Amendments to the Claims:

Please amend Claims 1, 16 and 47. Please cancel Claims 33-46. The Claim Listing below will replace all prior versions of the claims in the application:

Claim Listing:

1. (Currently Amended) A saturable absorber Q-switch, comprising a monocrystalline lattice spinel crystal structure and chemical composition [having a formula] $Mg_{1-x}Co_xAl_yO_z$ where x is greater than 0 and less than about 1, y is greater than 2 and less than about 8, and z is between about 4 and about 13, wherein the molar ratio of magnesium:cobalt:aluminium is (1-x):x:y, where x is greater than 0 and less than about 1, and y is greater than 2 and less than 8, said lattice having tetrahedral and octahedral positions, and wherein most of the magnesium and cobalt occupy tetrahedral positions.

2. (Original) The saturable absorber Q-switch of Claim 1, wherein essentially all of the cobalt and magnesium occupy tetrahedral positions.

3. (Original) The saturable absorber Q-switch of Claim 2, wherein the unit cell dimension is between about 7.970Å and about 8.083 Å.

4. (Original) The saturable absorber Q-switch of Claim 3, wherein z is about 4.

5. (Original) The saturable absorber Q-switch of Claim 3, wherein y is about 4 and z is about 7.

6. (Original) The saturable absorber Q-switch of Claim 3, wherein y is about 6 and z is about 10.

7. (Original) The saturable absorber Q-switch of Claim 3, wherein cobalt is present in the monocrystalline lattice in an amount between about 0.02 atomic weight percent and about 0.043 atomic weight percent.

8. (Original) The saturable absorber Q-switch of Claim 1, having an absorption band of between about 1537 and about 1544nm.

9. (Original) The saturable absorber Q-switch of Claim 8, having an absorption band of about 1537nm.

10. (Original) The saturable absorber Q-switch of Claim 8, having an absorption band of about 1539nm.

11. (Original) The saturable absorber Q-switch of Claim 8, having an absorption band of about 1544nm.

12. (Original) The saturable absorber Q-switch of Claim 1, having an absorption band of about 1337nm.

13. (Original) The saturable absorber Q-switch of Claim 1, having an absorption band of about 1360nm

14. (Original) The saturable absorber Q-switch of Claim 1, having an absorption band of about 1365nm.

15. (Original) The saturable absorber Q-switch of Claim 1, having a decay time, τ_{31}, greater than about 30×10^{-6} seconds.

16. (Currently Amended) A laser system, comprising:

a) a laser resonator cavity defined by a flat mirror and an outcoupler mirror, said flat mirror and said outcoupler mirror oriented to form an optical resonant axis;

b) a lasing element within the laser resonator cavity;

c) optical pumping means proximate to said lasing element; and

d) a saturable absorber Q-switch lying along the resonant axis, said Q-switch including a monocrystalline lattice spinel crystal structure and chemical composition [having a formula] $Mg_{1-x}Co_xAl_yO_z$, where x is greater than 0 and less than about 1, y is greater than 2 and less than about 8, and z is between about 4 and about 13, wherein the molar ratio of magnesium:cobalt:aluminium is (1-x):x:y, where x is greater than 0 and less than about 1, and y is greater than 2 and less than 8, said lattice having tetrahedral and octahedral positions, and wherein most of the magnesium and cobalt occupy tetrahedral positions.

17. (Original) The laser system of Claim 16, wherein essentially all of the magnesium and cobalt occupy tetrahedral positions.

18. (Original) The laser system of Claim 17, wherein the saturable absorber Q-switch has an absorption band within about 4nm of the lasing transition of the lasing element.

19. (Original) The laser system of Claim 18, wherein the saturable absorber Q-switch has an absorption band within about 2nm of the lasing transition of the lasing element.

20. (Previously Presented) The laser system of Claim 17, wherein the lasing element is an Er:Yb:glass or Er^{3+}:glass lasing element.

21. (Original) The laser system of Claim 20, wherein the saturable absorber Q-switch has an absorption band of about 1537nm.

22. (Original) The laser system of Claim 20, wherein the saturable absorber Q-switch has an absorption band of about 1544nm.

23. (Original) The laser system of Claim 17, wherein the lasing element is a Nd^{3+}:$YAlO_3$ lasing element.

24. (Original) The laser system of Claim 23, wherein the saturable absorber Q-switch has an absorption band of about 1360nm.

25. (Original) The laser system of Claim 23, wherein the saturable absorber Q-switch has an absorption band of about 1365nm.

26. (Original) The laser system of Claim 23, wherein the saturable absorber Q-switch has an absorption band of about 1337nm.

27. (Original) The laser system of Claim 17, wherein the unit cell dimension of the saturable absorber Q-switch is between about 7.970Å and about 8.083Å.

28. (Original) The laser system of Claim 27, wherein y is about 2 and z is about 4.

29. (Original) The laser system of Claim 23, wherein y is about 4 and z is about 7.

30. (Original) The laser system of Claim 27, wherein y is about 6 and z is about 10.

31. (Original) The laser system of Claim 27, wherein cobalt is present in the monocrystalline lattice in an amount between about 0.020 atomic weight percent and about 0.043 atomic weight percent.

32. (Original) The laser system of Claim 17, wherein saturable absorber Q-switch has a decay time, τ_{31}, greater than about $30x10^{-6}$ seconds.

33-46. (Canceled)

47. (Currently Amended) In a saturable absorber Q-switch that includes a monocrystalline lattice of cobalt-doped spinel crystal structure:

The improvement comprising a molar ratio of [aluminum to the combined molar amount of cobalt and magnesium that is greater than 2], magnesium:cobalt:aluminum is (1-x):x:y, where x is greater than 0 and less than about 1, and y is greater than 2 and less than 8, and wherein essentially all of the cobalt and magnesium occupy tetrahedral positions of the monocrystalline lattice.